Committee: Ecology & Environment

Topic: Deforestation in the Amazon

Definitions:

Ecosystem

A community of interdependent organisms and the physical environment they interact with.

Biome

A collection of ecosystems that share similar climatic conditions and so give rise to similar vegetation patterns. (eg. Tundra, Desert, Tropical/TemperateRainforest)

Tipping Point

The point at which the ecosystem enters a new equilibrium and is unable to return to its original state. The biodiversity and services provided by the system are changed.

Niche

The set of biotic and abiotic factors to which a species responds within its given environment.

Carbon Sink

A natural reservoir that stores carbon-containing chemical compounds.

Introduction:

The Amazon rainforest is the largest rainforest in the world, covering an area of 5,500,000 km^2 (2,100,000 sq mi). It represents over half of the planet's rainforests, and comprises the largest and most biodiverse tract of tropical rainforest in the world. This region includes territory belonging to nine nations. The majority of the forest is contained within Brazil, with 60%, followed by Peru with 13%, Colombia with 10%, and with minor amounts in Venezuela, Ecuador, Bolivia, Guyana, Suriname and France (French Guiana).

Historically, the livelihoods of indigenous Amazonian peoples have depended on the forest for food, shelter, water, fibre, fuel and medicines. The forest is also interconnected with their identity and cosmology. For this reason the deforestation rates are lower in indigenous territories, despite pressures encouraging deforestation being stronger.

According to 2018 satellite data compiled by a deforestation monitoring program, deforestation has hit its highest rate in a decade. About 7,900 sq km (3,050 sq miles) of rainforest was destroyed between August 2017 and July 2018. Most of the deforestation occurred in the states of Mato Grosso and Pará. It is suggested that at some point the forest will reach a tipping point, where it will no longer be able to produce enough rainfall to sustain itself.

In addressing environmental impacts, take a look at recent initiatives by the UN such as the United Nations Programme on Reducing Emissions from Deforestation and Forest Degradation (UN-REDD Programme), which was established in 2008. UN-REDD provides developing nations with incentives for reducing levels of deforestation and investing in carbon projects.

Main Causes:

- *Livestock:* The cattle sector of the Brazilian Amazon, incentivized by the international beef and leather trades, has been responsible for about 80% of all deforestation in the region, or about 14% of the world's total annual deforestation, making it the world's largest single driver of deforestation. By 1995, 70% of formerly forested land in the Amazon, and 91% of land deforested since 1970 had been converted to cattle ranching.

- Logging: There is an expanding global market for rainforest timber and pulpwood used in industries such as paper, infrastructure, and furniture, and wood is often used for fuel.

- *Urbanisation:* As cities expand, more land is needed to establish housing and settlements.

- *Roads:* The areas showing the greatest deforestation rates are those that have more roads. Logging, both legal and illegal, often follows road expansion (and in some cases is the reason for the road expansion). When loggers have harvested an area's valuable timber, they move on. The roads and the logged areas become a magnet for settlers—farmers and ranchers who slash and burn the remaining forest for cropland or cattle pasture, completing the deforestation chain that began with road building.

- *Forest Fires:* Can be caused by weather (lighting), climate (extreme warm summers and mild winters) or human activity (smoking, recreation, ecocide)

- *Desertification:* Land abuse (eg. chemical waste disposal into rivers leading to soil erosion) makes the land unfit for growth of trees.

- Mining: Not only is a considerable amount of land needed, but waste that comes out from mining pollutes the environment endangering nearby species.

- *Poverty:* drives people to migrate to forest frontiers, where they engage in slash and burn forest clearing for subsistence.

- *Legislature:* State policies to encourage economic development, (such as road and railway expansion projects) agricultural subsidies, tax breaks, and timber concessions, have lead to unintentional deforestation and forest clearing.

- *Global economic factors:* eg. foreign debt, low domestic costs of land, labor, and fuel.

- *Technology:* Industrial-scale deforestation is made available, and inefficient equipment can lead to collateral damage in surrounding forests, making further deforestation more likely.

Main Effects of Deforestation

Increase in Global Warming
Trees play a major role in controlling global warming. Trees use green-house gases, restoring the balance in the atmosphere. With constant deforestation the ratio of green-house gases in the atmosphere has increased.

Soil Erosion
Trees provide shade for soil, keeping it moist. With the clearance of tree cover, the soil is directly exposed to the sun, making it dry.

Floods
When it rains, trees absorb and store large amount of water with the help of their roots. When they are cut down, the flow of water is disrupted and leads to floods in some areas and droughts in other.

Wildlife Extinction
Due to massive felling down of trees, various species of animals are lost. They lose their habitat and are forced to move to new location. Some of them are even pushed to extinction.

Key statistics:

- The Amazon rainforest spans 670 million hectares.
- Between 90-140 billion metric tons of carbon is stored in the Amazon forests, making it one of the largest carbon sinks on the planet.
- Forest losses in the Amazon biome averaged 1.4 million hectares per year between 2001 and 2012, resulting in a total loss of 17.7 million hectares, mostly in Brazil, Peru and Bolivia.
- According to the WWF, if current trends continue, deforestation could double to 48 million hectares between 2010 and 2030, meaning that more than a quarter of the Amazon biome would be without trees
- The region is believed to be home to 10% of all known species on Earth. 75% of plant species found in the region are unique to the Amazon, and there are 3,000 species of fish, the largest number of freshwater fish species in the world.
- 34 million people live in the Amazon and depend on its resources.
- More than one-third of the Amazon forest belongs to more than 3,344 formally acknowledged indigenous territories.
- Until 2015, only 8% of Amazonian deforestation occurred in forests inhabited by indigenous peoples, while 88% of occurred in the less than 50% of the Amazon area that is neither indigenous territory nor protected area.

Possible Solutions:

Together, this committee should address three sub-issues:
promoting sustainable forest management, providing social and economic support for forest-dependent people, and mitigating the environmental impacts of deforestation.

- Incorporate sustainable logging practices such as:
    - Directional tree felling to inflict the smallest impact on the surrounding forest.

    - Establishing stream buffer zones and watershed protection areas.
    - Using improved technologies to reduce damage to the soil caused by log extraction.
    - Careful planning to prevent excess roads which give access to transient settlers.
    - Reducing wood waste for cut areas.
    - Limiting the gradient of roads to prevent excess erosion.

- Planting young trees to replace the older ones that were cut. Trees are being planted under several initiatives every year, but they still don't match the numbers of the ones we've already lost.

- Requiring certain big companies, incorporated in France, to adopt effective due diligence plans that assess environmental and human rights risks throughout their supply chains. provisions on transparency, assessing and mitigating risk, and penalty payments for non-compliant companies.

- Consider researching national efforts for developing environmentally safe agricultural practices. By implementing rotation harvests, successive harvests can occur with enough time in between to allow for forest regrowth. In another strategy, forest rehabilitation, efforts are made to restore a forest to its pre-disturbance condition.

Past International Action:

The issue of deforestation as a topic of concern was first introduced on an international level at the 1972 Conference on Environment and Development (UNCED) in Rio de Janeiro, Brazil. The product of this conference was a report informally referred to as the "Forest Principles," which stated that although nations had the right to profit from their natural resources, forest lands should not be used without protection, regulation, and conservation. In October 2000, the United Nations Economic and Social Council (ECOSOC) created the United Nations Forum on Forests (UNFF) as an intergovernmental policy forum with the mission to foster "the management, conservation and sustainable development of all types of forests and to strengthen long-term political commitment to this end." As a result of heated negotiations from the fifth, sixth, and seventh UNFF meetings, the UN General Assembly passed the Non-Legally Binding Instrument on All Types of Forests as Resolution 62/98 in December 2007.

As outlined by the instrument, the UNFF has four primary points of focus. The first objective is to protect, conserve, and restore the world's forests through sustainable forest management (SFM). This is an evolving concept, as the introduction of new, innovative strategies alters how forests can be maintained optimally for present and future use. Second, the UNFF assists people who are dependent on forests for a living. Third, the UNFF works to relocate the production of forest-derived products to sustainably managed forests. Finally, the UNFF is responsible for ensuring that any conservation efforts are backed with sufficient financial support.

Despite its initial success, the UNFF has garnered criticism in recent years for failing to achieve its mandate. For instance, critics have called for greater emphasis on addressing the root causes of economic reliance on trees. Technological advancements have led to the increase of paper consumption worldwide. For China and India, two emerging global powers, consumption of wood products is also expected to continue increasing. Trade liberalization initiatives by the World Trade Organization have made it easier to distribute forest-derived products globally—however, this has come at the expense of forests.

Bibliography / Useful Sources:

https://wwf.panda.org/our_work/forests/deforestation_fronts2/deforestation_in_the_amazon/

https://rainforests.mongabay.com/amazon/deforestation_calculations.html
(At the bottom of the page there are several links to other useful things you may want to know)

https://www.carbonbrief.org/amazon-carbon-sink-could-be-much-less-due-to-lack-of-soil-nutrients

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